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Surveys for Southwestern Willow Flycatchers within VR-176

SURVEYS FOR SOUTHWESTERN WILLOW FLYCATCHERS WITHIN VR-176

FINAL REPORT TO GEOMARINE, INC.

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EXECUTIVE SUMMARY

As part its Biological Opinion concerning the proposed expansion of activities in VR-176 by the German Air Force, the US Fish and Wildlife Service required the implementation of survey and monitoring programs for five species of concern, including the southwestern willow flycatcher. In 1999, field crews of the Rocky Mountain Research Station conducted surveys for flycatchers along 42.5 km of riparian habitat in five drainages within VR-176: the San Francisco and Mimbres Rivers and the East Fork, West Fork, and Main Trunk of the Gila River. These drainages are located close to the largest known flycatcher population on the lower Gila River in New Mexico. No definite flycatchers were located in any of the drainages surveyed, although one possible bird may have been observed on the Mimbres. Unusual weather conditions resulting from the La Niña climate pattern may have reduced the likelihood that flycatchers would have emigrated to, or remained in, these drainages. We recommend that surveys be repeated periodically, as colonization of sites within VR-176 seems very likely in the near future.

INTRODUCTION

The southwestern willow flycatcher *(Empidonax traillii extimus)* is a Neotropical migrant bird found during the breeding season from southern California and Baja California eastward through Arizona, southern Utah, southern Colorado, New Mexico, and trans-Pecos Texas (Unitt 1987). This species is an obligate riparian specialist, nesting in dense vegetation associated with watercourses. In the Southwest, nesting is almost always in the vicinity of surface water or saturated soils (U.S. Fish and Wildlife Service 1995). Populations of the southwestern willow flycatcher have declined significantly during this century, primarily due to extensive loss and conversion of riparian habitats (Unitt 1987, U.S. Fish and Wildlife Service 1995). As a consequence, the US Fish and Wildlife Service listed *E. t. extimus* as endangered in 1995. As of 1996, flycatchers had been found breeding at about 109 sites throughout the southwestern United States (Finch 1999). Approximately 70% of extant sites consist of 10 or fewer territories. The entire known breeding population in 1996 was estimated at about 549 pairs (Finch 1999). However, many areas of the Southwest have not been surveyed.

By far the largest known breeding concentration of southwestern willow flycatchers is located in the Cliff-Gila Valley, New Mexico, with approximately 243 pairs in 1999 (Stoleson and Finch unpublished data). Average nesting success in the population is high (Stoleson and Finch 1999). As a result, this population has apparently grown substantially since it was first surveyed in 1994, when 81 pairs were located (Parker and Hull 1994). It seems likely that the population will continue to grow and expand in the future. For example, the Gila National Forest initiated riparian restoration efforts in the Gila Bird Area in 1995, modeled after land and water management practices of occupied areas upstream in the Cliff-Gila Valley. Flycatchers moved into the site by 1997, and bred successfully in 1998, although no breeding flycatchers had been recorded at the site in the previous 39 years (P. Boucher, Gila National Forest endangered species biologist, personal communication). This strongly suggests an expansion of the Cliff-Gila valley population.

Ongoing riparian recovery efforts and livestock exclusion by the Gila National Forest and The Nature Conservancy of New Mexico are creating healthy riparian habitat in numerous sites in southwestern New Mexico that were not known to be occupied by southwestern willow flycatchers as of 1998. Continuous improvements in habitat quality as well as proximity to the large and expanding flycatcher population in the Cliff-Gila valley suggest that these sites are the most likely targets for colonization by flycatchers in the near future.

Purpose of Surveys

In November of 1997, the U.S. Air Force entered into formal consultation with the U.S. Fish and Wildlife Service, in accordance with Section 7 of the Endangered Species Act, regarding the Proposed Expansion of German Air Force Operations at Holloman Air Force Base. On 8 May 1998, the Service issued its Biological Opinion that required the Air Force to implement a survey and monitoring program for five species of concern, including the southwestern willow flycatcher. Several potential flycatcher breeding sites located on the San Francisco, Gila, and Mimbres Rivers, lie within the VR-176 flight path. We report the results of field surveys for southwestern willow flycatchers conducted within VR-176 during the breeding season of 1999.

STUDY SITES

We surveyed riparian woodlands along the San Francisco, Gila, and Mimbres Rivers within the flight path of VR-176. These sites appeared to be the most likely to be inhabited by flycatchers because of their structure, proximity to water, and proximity to the expanding population in the Cliff-Gila Valley.

Mimbres River Valley

The Mimbres River drains the western portion of the Gila National Forest and flows southward towards Deming, New Mexico (Figure 1). We surveyed sites comprising a

discontinuous set of lands owned and managed by The Nature Conservancy of New Mexico. Two contiguous parcels lie south of NM Route 156 (Disert, Dominguez), and cover about 2.5 km of streamside habitat. Two contiguous parcels lie north of Rt. 156 (Giraud, McAnally), and extend about 3.2 km along the Mimbres River. Together these sites comprise approximately 5.7 linear km of streamside habitat. Elevations range from 1889 to 1729 m.

This site is located on the nearest drainage to the Cliff-Gila Valley (approx. 40 km distant). A habitat assessment conducted by the Rocky Mountain Research Station in 1998 found that portions of the Preserve did not differ in habitat structure or floristics from densely occupied flycatcher breeding sites on the Gila River (Stoleson *et al.* 1998). The upper Mimbres patches are characterized by dense, multistoried box elder (*Acer negundo*) and willow (*Salix* spp.) under a canopy of lanceleaf cottonwood (*Populus lanceolata*). These patches appear to be high quality habitat for flycatchers. The Disert and Dominguez parcels support a mosaic of tall cottonwoods with little undergrowth and younger, dense patches of willow and seepwillow (*Baccharis glutinosa*). Water flowed in the Mimbres throughout the surveys.

Upper Gila River Valley Sites

Three stretches of the upper Gila River Valley (upstream of the Cliff-Gila Valley) were identified by Monzingo (1994) as having adequate floodplain width and vegetation density to potentially support willow flycatchers. These sections are the Main Trunk, the West Fork, and the East Fork. Although no birds were located in surveys conducted by personnel of the Gila National Forest in 1994 and 1997 (Camarena 1998), these sites appeared to be the most likely locations to be colonized from the Cliff-Gila Valley because of their proximity and location within the same drainage.

Main Trunk, Gila River

This survey area began at the Gila River bridge approximately 2 km south of the settlement of Gila Hot Springs, and continued downstream about 9.2 km to Alum Camp. Elevations range from 1640 to 1667 m. Riparian habitats in this reach were intermittent corridors lining the

stream channel, made up of mostly young Fremont and lanceleaf cottonwoods (*Populus fromontii, P. lanceolata*), Arizona alder *(Alnus oblongifolia*), coyote and Goodding's willow (*Salix exigua, S. gooddingii*). Many portions of this reach were in narrow and steep-sided canyons with moderate stream gradients. Uplands immediately adjacent to the floodplain supported ponderosa and piñon pines (*Pinus ponderosa, P. edulis*) and junipers (*Juniperus deppeana, J. monosperma*).

West Fork, Gila River

The West Fork of the Gila River was surveyed beginning at the confluence of the East and West forks of the Gila River and extending approximately 12 km upstream to Grudging's cabin. Elevations range from approximately 1672 to 1710 m. This stretch includes the Heart-Bar Wildlife Refuge run by the New Mexico Department of Game and Fish. Much of the valley bottom here is relatively wide. Potentially suitable habitat is discontinuous, with numerous short stretches having little or no woody vegetation. However, many portions, including the Heart-Bar, support extensive dense stands of cottonwood, willow and alder.

East Fork, Gila River

This reach began at the Gila River bridge approximately 2 km south of the settlement of Gila Hot Springs, and continued upstream approximately 5.6 km. Elevations range from approximately 1672 to 1690 m. Although located in the middle of the Gila National Forest, much of the bottomland in this canyon is privately owned. Several of the private landowners refused access to our survey team, therefore we were unable to survey significant portions of private land and some public lands farther upstream. However, Gila National Forest personnel informed us that most of the canyon bottoms in the upper reaches now support only shrubby, early-successional vegetation because of severe floods in 1997 (P. Boucher, Gila N.F. biologist, personal communication). Such habitats are inappropriate for willow flycatchers. In the areas surveyed, vegetation was primarily younger, dense stands of willows and seepwillow. More mature stands with high canopies of cottonwood and Arizona sycamore (*Platanus wrightii*) were

scattered throughout.

San Francisco River

The San Francisco River drains most of the northwestern portion of the Gila National Forest and parts of the Apache-Sitgreaves National Forest. Much of the valley bottom is private property in settlements such as Glenwood and Alma, or in irrigated agriculture and pastures. Surveys were conducted on discontinuous portions of National Forest land from approximately 7 km south of the town of Glenwood, downstream approximately 10 km. Again, access to some private portions was denied, prevented our surveying both those private portions and some isolated FS parcels.

Most of the San Francisco Valley surveyed was in a broad but deep, steep-sided canyon. Approximately one half of the stream length was bordered by dense stands of willow, alder, and cottonwood. Other portions supported a variety of riparian habitat types, including dense young thickets of seepwillow, and open groves of sycamore and walnut. All riparian stand types were surveyed. Running water was present throughout the season, and numerous sloughs and seeps held standing water.

SURVEY METHODS

Each site was surveyed systematically for willow flycatchers using standardized survey techniques developed by the U.S. Fish and Wildlife Service (Sogge *et al.*, 1997). These techniques employ the playing of recordings of flycatcher song to elicit responses from territorial birds. All flycatchers heard or seen were recorded. An effort was made to conduct surveys between sunrise and noon, as birds tend to be unresponsive after noon (Sogge *et al.*, 1997). However, the remote locations of some of the drainages made this logistically difficult. In no case did surveys extend beyond 1400 h. On initial surveys, all riparian habitat was surveyed. It was apparent that some sections of these rivers did not constitute suitable habitat for willow flycatchers because of inadequate vegetation cover or steep-sided, narrow canyons. These

sections were not surveyed intensively in subsequent visits. Surveys were not conducted during periods of rain or strong winds. Data were recorded on official southwestern willow flycatcher data sheets (Appendix 1). Surveyors from the Rocky Mountain Research Station held all appropriate state and federal permits required for surveying and monitoring southwestern willow flycatchers, and all had attended a mandatory survey protocol training session before initiating fieldwork.

RESULTS & DISCUSSION

Survey Results

We found no definite willow flycatchers in any of the surveyed riparian habitats (Table 1). One possible bird was seen on 8 July on the Giraud parcel on the Mimbres River. That bird came in to the taped song, but did not vocalize at all. Light conditions were poor, but it appeared to be a willow flycatcher based on bill size, shape, and color, and plumage characteristics. Early July coincides with the peak of breeding activity by willow flycatchers in the Southwest, when most pairs have nestlings or very young fledglings (Sogge *et al.* 1997). Breeding birds typically are silent at this time, presumably to avoid attracting predators to their nests (Uyehara and Narins 1995). In contrast, unpaired males tend to be extremely vocal well into July. Although females rarely vocalize (except for pair interaction calls), most authorities agree that unpaired females tend to be very rare in this species; populations with male-biased sex ratios usually exhibit frequent polygyny (Sedgwick and Knopf 1989). Therefore we infer that the unknown bird was most likely a breeding willow flycatcher. Unfortunately, a subsequent search to verify this sighting failed to relocate the bird.

The Giraud site was previously found to be almost identical in terms of vegetation structure and composition to occupied habitat in the Cliff-Gila Valley (Stoleson *et al.* 1998). Thus, it is likely to constitute high quality habitat for willow flycatchers, and could be expected to be among the first areas colonized within the Mimbres valley.

Table 1. Timing and results of surveys for southwestern willow flycatchers within VR-176, 1999.

SITE	Date	Time	Surveyor[1]	No. SWWF[2]	No. BHCO[2]	Weather
San Francisco Valley						
	6/15/99	0720-1230	HW/SS	0	3F, 2M	clear
	7/9/99	0720-0930	HW	0	4F, 1M	clear
	7/22/99	0710-1000	HW	0	8F, 1M	p. cloudy
Mimbres Valley						
Disert	6/7/99	0635-0735	HW/KB	0	1	clear
	6/24/99	0720-0750	HW/KB	0	1	clear
	7/8/99	0715-0750	HW	0	1	overcast
Dominguez	6/7/99	0735-0800	HW/KB	0	1	clear
	6/24/99	0700-0720	HW/KB	0	0	clear
	7/8/99	0645-0715	HW	0	1	overcast
MacAnally	6/7/99	0920-1140	HW/KB	0	2	clear
	6/24/99	0825-1005	HW/KB	0	2	clear
	7/8/99	0820-0955	HW	0	1	overcast
Giraud	6/7/99	1225-1340	HW/KB	0	1	clear
	6/24/99	1030-1200	HW/KB	0	0	clear
	7/8/99	1010-1130	HW	1(?)	2	overcast
Gila Valley						
Main Trunk	6/17/99	0800-1220	HW/KB	0	4	cloudy, windy
	6/18/99	0910-1210	HW/KB	0	0	cloudy, windy
	7/9/99	0630-1400	JG	0	2	clear
	7/23/99	0630-1400	JG	0	1	cloudy
West Fork	6/16/99	0715-1330	HW	0	2	clear
	7/8/99	0630-1400	JG	0	present	clear
	7/22/99	0630-1400	JG	0	5	cloudy
East Fork	6/14/99	0730-1230	HW/SS	0	1	clear
	7/10/99	0630-1030	JG	0	1	partly cloudy
	7/24/99	0630-1030	JG	0	2	cloudy/rain

[1] HW= Hira Walker, KB= Katherine Brodhead, JG= Joy Garcia, SS=Scott Stoleson

[2] SWWF = southwestern willow flycatcher, BHCO = brown-headed cowbird

Climate as a Possible Influence on Survey Results

In 1999, the weather in the Southwest was strongly influenced by the La Niña phenomenon. These influences resulted in a near-record breaking drought during winter and spring followed by an early and extremely wet monsoon season. For example, at Cliff, the nearest weather station to the Cliff-Gila Valley site, a total of 1.86 inches of rain fell from 1 January through 30 June of this year – only 46.3% of normal. In contrast, in excess of 11 inches fell during July and August, or over 195% of normal for those months (data from the Western Regional Climate Center, www.wrcc.dri.edu/summary). To exacerbate the springtime drought, the mountain ranges that drain into the three rivers surveyed received virtually no snowpack during the winter of 1998-99. Snowmelt from the mountains supplies the majority of river water during the spring when flycatchers arrive on their breeding grounds and set up territories. Thus, the rivers flowed at very low levels at the time the birds arrived in 1999. Abundant water has been shown to be a critical factor affecting willow flycatcher settlement and nesting success (Sogge *et al.* 1997, Johnson *et al.* 1999). The low water levels within the rivers surveyed probably reduced their suitability as breeding habitat in 1999.

Evidence from our field surveys in the Cliff-Gila Valley suggests that the local population of flycatchers may have contracted this year, withdrawing from the margins of occupied areas. We documented significant increases in flycatcher numbers in some centrally located sections of our main study area, specifically in several patches that included or were adjacent to permanent water such as ditches and a marsh (See *core areas near water* in table 2 below). Other centrally located patches showed no such increase – these most often were not closely associated with any water source except for the Gila River (e.g., SE1, NW1 in table 2). In contrast, patches surveyed that were located on the periphery of the core study area tended to show decreases in flycatcher numbers (e.g., *peripheral areas* in table 2). Overall, the estimated number of pairs in the entire valley increased slightly from 232 in 1998 to 243 in 1999. Taken in total, these results suggest the pattern of settlement by flycatchers in 1999 may have differed from previous years, with flycatchers concentrating near well-watered areas in the core of the valley and withdrawing

somewhat from more peripheral areas. If that is the case, it seems likely that 1999 would have been a poor year for birds to expand into the drainages within VR-176.

Table 2. Changes in willow flycatcher subpopulations in the Cliff-Gila Valley 1998-99.

Location / patch	estimated no. pairs 1998	estimated no. pairs 1999
Core areas near water		
U-Bar Ranch, NW4	27	41
U-Bar Ranch, NE4	23	30
U-Bar Ranch, NE5	18	25
Core areas not near water		
U-Bar Ranch, SE1	51	49
U-Bar Ranch, NW1	8	7
Peripheral Areas: north end		
TNC- Gila Middle Plot	2	1
TNC- Gila Island Plot	7	1
Peripheral Areas: south end		
Gila Bird Area: south	4	0
Gila Bird Area: north	4	7
Entire Cliff-Gila Valley	232	243

Recommendations

Although no sure detections of flycatchers were recorded in these surveys, it is highly likely that birds will emigrate in increasing numbers from the Cliff-Gila Valley as that population continues to grow and occupy all available habitat. As outlined in the introduction, the drainages surveyed here are the most likely targets for emigrants. Evidence suggests successful emigration may be more likely in years with abundant springtime precipitation. Therefore, we recommend that surveys continue during the 10 year span of the Biological Opinion. However, we feel that surveys need not be conducted in every drainage in every year.

We recommend that future surveys be conducted every other year in those river reaches

that appear to provide the best habitat for flycatchers. In our estimation, the best habitats exist on the San Francisco, Mimbres, and the West Fork of the Gila. Should flycatchers be located in one of these drainages, then surveys should be repeated there on an annual basis. We further recommend that additional surveys be conducted on the Main Trunk and East Fork of the Gila once more after about 5 years.

Table 3. Suggested schedule for resurveying drainages within VR-176 from 2000-2008 (*S* indicates the site should be surveyed).

Site	2000	2001	2002	2003	2004	2005	2006	2007	2008
Mimbres Valley	S		S		S		S		S
Gila River, Main Trunk					S				
Gila River, West Fork	S		S		S		S		S
Gila River, East Fork					S				
San Francisco Valley	S		S		S		S		S

ACKNOWLEDGMENTS

We thank L. Henderson and S. Lee Of GeoMarine for facilitating this research. H. Walker, J. Garcia, and K. Brodhead conducted the surveys, and J. Monzingo and P. Boucher shared their expertise of the sites.

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